ADMINISTRATION REPORT

OF THE

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PUBLIC WORKS DEPARTMENT,

(GENERAL BRANCH,)

BOMBAY PRESIDENCY,

FOR THE YEAR

1884-85. to 1891-92.

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ADMINISTRATION REPORT

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PUBLIC WORKS DEPARTMENT, BOMBAY,

(GENERAL BRANCH,)

FOR THE YEAR 1884-85.

GENERAL REMARKS.

1. The total expenditure of the year was Rs. 81,64,540 as per margin. The expenditure in India was Rs. 81,41,452. In round figures the expenditure on New Works was Rs. 37⅜ lákhs; on Repairs, Rs. 28 1/20 lákhs; on Establishment, Rs. 14 lákhs; on Tools and Plant, Rs. ¼ lákh; and on Barrack Department (chargeable to Military Grant), Rs. 1¼ lákh.

	Rs.
In India.	
Imperial	16,59,489
Provincial	41,44,310
Contributions	2,77,013
Local Funds	20,60,640
Total Rs. ...	81,41,452
In England	23,088
Grand Total Rs. ..	81,64,540

I.—MILITARY WORKS.

2. The expenditure under the head Military was Rs. 14,64,114, of which Rs. 5,55,950 was for Original Works; Rs. 5,08,278 for Repairs; Rs. 2,47,393 for Establishment; Rs. 29,859 for Tools and Plant; and Rs. 1,22,634 for Barrack Department.

1.—ACCOMMODATION FOR TROOPS.

Buildings for European Troops in the Plains (Permanent.)

3. A teak boarded floor has been provided for fencing classes, and an asphalte floor in the store and dressing rooms of the Gymnasium for British Troops at Colába.

4. In the Hospital for British Troops at Ahmedabad, described in previous reports, the following work has been done during the year:—In the Male Hospital, Mangalore tiles, in place of common tiles, asphalte floor for stone floor, and rolled iron beams, and Westwood and Baillie's corrugated plates, for planked floor on teak girders, have been sanctioned, and the work is nearly completed. The Female Hospital is nearly completed. Of the subsidiary buildings, the guard-room, 25′×22′, for 6 men, prisoners' room, 23½′×10′, lavatory, 8′×8′, and latrine, 8′×6¾′, have been nearly, and a cookroom for female hospital, is completed. The minor items, as well as water tower and double cookroom for male hospital, will be finished during the course of a few months. The outlay during the year was Rs. 56,010.

5. The ventilation of the theatre of the Soldiers' Institute at Poona has been improved by the construction of twenty large dormer ventilators in the roof of the building. These ventilators are fitted partly with fixed venetians, and partly with a large, moveable panel, which can be opened or shut with cords from below, to regulate the up-draught. The ventilation now is all that can be desired, and the temperature of the room has been sensibly lowered by the increased facilities for the escape of hot air above. The work has been completed at a cost of Rs. 2,610.

6. Quarters for Married Officers at Devláli have been in progress. The quarters provide accommodation (two rooms, and a bath-room each) for 9 officers. A mess-room, and subsidiary rooms, occupy the centre of the building. A broad verandah in front is partially closed in with trellis-work. Servants' quarters are provided in a building near at hand. During the year most of the masonry work has been completed, and there is every hope of the building being ready for occupation in October next, if funds are available. The expenditure during the year amounted to Rs. 19,960.

Buildings expected to yield a return on their outlay.

7. New permanent quarters for Officers in the Marine Lines, Bombay, comprising two blocks to accommodate four Field Officers, or eight Officers below that rank, with servants'

quarters, stables, &c., have been in progress during the year. The new Officers' quarters are to be built in two blocks, each to accommodate the number of officers according to their rank, under paragraph 9, section 3 of the Bombay Barrack Regulations. The unit in these quarters will be :—

I.—The half block complete with out-houses for rank of a Field Officer.
II.—The first floor of half block, with proportion of out-houses, for rank of Captain.
III.—The ground floor of half block, with proportion of out-houses, for rank of Lieutenant.

The ground floor consists of two main rooms, one 22′ × 18′, and the other 20′ × 18′, with an arcade on the west and north end, and open verandah on the east side. The centre portion is appropriated for the staircase, a godown, and a dispense room. Terraced porches have been provided on both ends of the blocks.

The first floor has also two rooms, one 22′ 4½″ × 18′ 6″, and the other 20′ 6″ × 18′ 3″, having bath and dressing rooms, with an open verandah both on the east and west sides, and which are protected by cast iron railing.

The full complement of servants' quarters, laid down in paragraph 9, section 3 of the Bombay Barrack Regulations, has now been provided, to preclude any claim for rent for inferior quarters by a Colonel, Lieutenant-Colonel, or Surgeon-Major.

The out-houses to one-half block consist of one block for in-door servants, comprising 6 rooms and one kitchen, and one block for out-door servants, and stables, comprising 6 rooms, 4 stalls, and one coach-house.

Up to the end of the year, only the plinth of the Officers' quarters was finished, and the whole of the servants' quarters were nearly completed. The expenditure during the year was Rs. 37,813.

Buildings for Native Troops.

8. Arm-racks, on the standard plan, were provided in the Pendalls of Her Majesty's 10th Regiment Native Infantry at Bori Bandar, Bombay. Out of 778 provided for, only 450 were completed, owing to the failure of the contractor.

2.—ORDNANCE WORKS.

9. The new shed and machinery in the Arsenal at Bombay, described in the last report, was completed during the year at a cost of Rs. 21,445, of which Rs. 12,695 were expended in 1884-85.

10. The following works have been completed in connection with the Ordnance Depôt at Ahmedabad :—a powder magazine, 95′ × 24½′, shifting-room, 20′ × 25′, a tank in the compound of the magazine, and enclosure wall round the magazine. The gunshed affords accommodation for 30 guns, and is 357 feet long and 33 feet wide, and is to be constructed against the Fort wall; the roof is a terraced one, supported on arches; this work was commenced during the year, but orders for its suspension were received in February 1885, as the Military Department had decided that the Reserve Battery at Ahmedabad should not be kept there. The only work since done has been filling in foundations with concrete, and partial filling in with burnt brick and lime masonry. The expenditure during the year was Rs. 36,008.

11. The following additions and alterations to the Small Arms Ammunition Factory at Kirkee have been carried out during the year :—A building for lubricating bullets, consisting of two rooms, measuring, respectively, 20′ × 20′ and 30′ 6″ × 20′, with a 10 feet wide passage between them, carrying a tramway, the whole surrounded by an open verandah, 9 feet wide in the clear, has been built. The walls of the building are of coursed rubble masonry, plastered on the inside; the roof double-tiled, on teakwood framing; the doors of teak, half-panelled and half-glazed; windows teak glazed; floor of cut stone pavement. Completed at a cost of Rs. 6,609.

A Moulder's shop, measuring 23′ × 35′, has been erected in continuation of the Smith's shop, of which it forms a part. The blast furnace has been removed from its former position in the Smith's shop, to the new building, and the flues reconstructed and improved. The walls are constructed of coursed rubble masonry plastered on the inside; the roof is of corrugated iron over a planked ceiling; the doors of teak half-panelled and half-glazed. The building has been fitted with lightning conductors, and its actual cost amounts to Rs. 3,462.

The main factory, being a large square building, the light in the centre was not sufficient for the accurate working of the lathes, and it was found necessary to provide more light. This has been done by the conversion of one of the ordinary pitched roofs, in the centre of the building, into a saw-toothed roof, with a glazed north front, which has answered its purpose admirably. Actual cost Rs. 1,735.

Considerable inconvenience was experienced in the Factory in the manufacture of Martini-Henri cartridges, owing to the machinery for this ammunition not being located in the main building. This has now been remedied. In order to provide the necessary space in the main factory for this machinery, the hot-rooms have been removed from this building, and located in the damping-room of the cap-factory. The damping-room, 18′ × 15′, has been divided into two by a brick partition, forming two hot-rooms, which have been

fitted with the necessary double doors and windows, plank ceiling, steam piping, &c. The workmen's lavatory has also been removed from its old position, contiguous to the hot-rooms, and set up, with all its fittings complete, near the stand-pipe, against the north-wall of the factory. In the space thus provided in the main factory, the Martini-Henri machinery has been erected, and a new 2½″ shaft, with all the necessary hangers and fittings, has been provided for driving it.

The enlargement of the hand-operation room has been undertaken, and the work just commenced. The old hand operation-room has been dismantled, the foundation and plinth of the additional room completed, and the superstructure is in progress.

The present lead-squirting room, being too small, an addition is being made to it, and the work has lately been taken in hand. The foundation and plinth have been completed, and the superstructure is now in progress.

The verandah of the soldering-room is being enclosed with glass to make it useful as a workshop. The work has only lately been commenced, and woodwork prepared.

With a large quantity of valuable stores always in stock, the want of an enclosed and covered storeyard has been much felt, and this want is now being met. The storeyard is being enclosed by a high wall, against the inside of which an open lean-to shed is being erected, with two closed store-rooms for articles requiring greater security. The foundations and plinth of the enclosure wall are built, and the superstructure is in hand. The estimated cost of the work is Rs. 16,350, of which Rs. 5,000 have been spent.

The northern sky-light put in before, having been found a great improvement, similar lights are now being put to all the north faces of the roof of the machine-room. The iron roof has been opened, the new framing put in, and the glazing is in progress. Expenditure, Rs. 3,505.

Additions and alterations to the system of distribution of water in the Factory, with a view to provide means for extinguishing fires, by placing fire plugs at different positions, so that, in case of fire in any part of the premises, a hose could be attached, and the fire drenched at once, were completed during the year, at an outley of Rs. 5,017.

7.—GENERAL CANTONMENT WORKS.

Water Supply.

12. Water supply pipes have been laid from Camp to Isthmus, Aden, through the Mussoorie tunnel, so that water from the Seera Condenser can now be pumped into the tanks at the Isthmus, originally built for the storage of the Shaikh Othman duct water. It is further contemplated to erect a steam-pump at the Isthmus, and to force the duct water into the Camp and town by the same piping. In connection with this plan, tanks for distributing the water will be required in both the above places. A recommendation, made by the Sanitary Commissioner, to line the Shaikh Othman duct with glazed stoneware piping, has been considered, and set aside—first, because the fall in the duct is insufficient to afford a full supply; and 2ndly, because the water from the wells at the source is not good enough to justify the expense. An estimate for raising the levels, and so improving the gradient of the duct, is under preparation: this will have the same effect as lining with stoneware, in lessening the risk of contamination on the route, and it will have the additional advantage of increasing, instead of diminishing, the flow.

13. An improved mode of conveying duct water to Steamer Point has been put in force by means of the Commissariat steam water boat. This boat takes the water from the pipe at the Pier of Obstruction, and conveys it down the harbour, to the Post Office Pier, and pumps it thence into the Steamer Point tanks.

14. The machinery of a 9,000 gallons' condenser has been received, and the new building for its reception is well advanced. In connection with it, a masonry tank, to hold 12,000 gallons, is being built on a level with the European Infantry Barracks, with pipe connection from the condenser pumps, so that water can be conveyed direct, without the intervention of the masak bheestie.

Drainage and Clearance.

15. The improvement of the drainage of the European Barracks at Hyderabad, described in last year's report, has been successfully completed at an outlay of Rs. 6,451.

8.—FORTIFICATIONS.

16. The following work has been carried out in connection with the Fortified Post at Ahmedabad during the year:—The south flank wall has been raised 4¼′ above ground level for the greater part of its length, and the west flank wall excavated, and material collected. Expenditure during the year, Rs. 13,488.

17. The new Fortifications at Aden, the cost of which is to be borne partly by the Home, and partly by the Indian, Government, were in progress during the year. These comprise the reconstruction of the two forts, Tarshyne and Morbat, commanding the entrance to the harbour. The new scheme covers more ground than before, in order to

separate the guns; each gun having its magazine close to it, below ground; and with galleries of communication extending all round the work. Both forts are to be entirely self-contained, with ample provision for storage of water and stores; also bomb-proof covering for the garrison. In Fort Tarshyne the greater part of the rock excavation is completed, and some of the masonry work is in hand. In Fort Morbat a good deal of scarping and ditch work has been got out, also the preliminary work of erecting sheds. Mortar mills and setting up profiles are well advanced. The works will take two years to complete.

18. The construction of the pier, and tramway and machinery for the Sub-Marine Mining Defences at Manora, for which a great part of the material had been provided during the previous years, was proceeded with, and the work was completed, and made over for use by the end of the year, including some additions in the way of filling in and levelling the ground round the Torpedo buildings, and providing two broad gauge trollies, and other small additions, which were sanctioned by Government against the savings from the original estimate.

9.—DOCKYARD AND NAVAL BUILDINGS.

19. Two sheds at Hog Island have been removed, and rebuilt, with a plinth and foundation of rubble masonry and lime, near the Graving Dock. The large shed, 150′ long and 35′ wide, has been divided off with planked partitions into a fitters' shop, a coal room, and a smiths' shop. The smiths' shop is provided with a ridge ventilator, 44′ × 6′, for the escape of smoke, &c. The roof is of teak trusses and corrugated iron sheets, supported on teak posts. The small shed is 62′ × 19¼′, supported on round teak posts, with walling and roofing of corrugated iron sheets. The floors of both the sheds are of earth; and a ramp in front of each shed is provided. Expenditure, Rs. 3,195.

20. The old cudjan roof coverings of the Boat slip sheds in the Dockyard, Bombay, have been removed, and corrugated sheet iron put up, at an outlay of Rs. 36,317.

21. The following additions and alterations to certain buildings in the Dockyard, have been carried out during the year:—Four teakwood racks have been provided in store-rooms Nos. 31 and 39 in the Marine Storekeeper's Yard; twenty-one teakwood glazed shutters to windows, and nine teakwood weather-boards, on the south and west sides of the petty store-room; a teakwood planked partition and a railing in the Accountant's office; an iron urinary, 6¼′ × 4½′, for the clerks of the Accountant's office; and three doors closed up, and three new windows inserted, in the walls of the store-rooms in Apollo Street; the expenditure on the whole being Rs. 2,967.

22. Lascars' quarters, as described in the last year's report, also a latrine, with a washing-room attached, have been constructed this year; also a store-room, 22¼′ × 16′ × 9′, and a railing to enclose a portion of the yard for the use of the Executive Engineer; a coach-house, 59′ × 16′ × 10′ high up to tie beam, for the use of the Dockyard officers; a latrine and a urinary for the use of the clerks of the Director's office; and masonry compound walls on the south and west sides, in place of the former wooden railings. The expenditure during the year was Rs. 8,765.

23. Quarters for the Boatswain of the Dockyard have been constructed, in which the following accommodation has been provided:—a sitting-room, 24¾′ × 16½′, a dining-room, and a bed-room, each 16½′ × 16¾′, with extra bed-room, 8½′ × 16¾′, three bath and dressing-rooms, and a store-room, under one roof, with verandah, 9¾′, wide, on the north and south sides. An outhouse, consisting of a cook-room and two rooms for servants' quarters, each 12′-10″ × 10′ 10″ × 10′ 3″. Expenditure, Rs. 12,645.

24. The thatched screens which protected the western sides of the slips Nos. 1 and 3 in the Dockyard, have been removed, and corrugated sheet iron put up, at an outlay of Rs. 4,166.

II.—CIVIL BUILDINGS, ROADS, AND SERVICES.

I.—CIVIL BUILDINGS.

I.—IMPERIAL SERVICES.

25. The expenditure under this head was Rs. 2,20,536, of which Rs. 1,34,447 was for Original Works; Rs. 46,861 for Repairs; Rs. 36,826 for Establishment; and Rs. 2,402 for Tools and Plant.

1.—FORESTS.

26. A residence, with out-houses and office, has been provided for the Forest Officer at Sukkur, at an outlay of Rs. 9,324. [Outlay shown under Provincial.]

2.—CUSTOMS.

27. The quarters for the Inspector at the Custom House at Karáchi, being very damp and unhealthy, has been pulled down, and rebuilt at a cost of Rs. 3,133. [Outlay shown under Provincial.]

3.—SALT.

28. It seems unnecessary to do more than briefly notice the works undertaken or in progress during the year for the Salt Department.

29. At Belápur, in the Thána District, the new Custom House (Sir Kárkún's office), commenced in the previous year, was completed at a cost of Rs. 7,350. A branch road leading to the Rowli Salt pans, near Bombay, was improved; the gradient of a steep portion near the Custom House, which was a serious obstacle to carts laden with salt, has been reduced, and the road surface metalled; the whole length of the branch is under 2 miles, and the outlay on its improvement was Rs. 10,111. In the Surat District a road, 3 miles in length, connecting the Dharasna salt works with the Dungri Railway Station, was commenced, and the earthwork was nearly completed: the branch is estimated to cost Rs. 15,305, of which about one-third was expended during the year.

30. The ground in front of the Salt depôt at Ahmedabad was metalled at a cost of Rs. 2,531.

31. An office, 32′×14′, and quarters for 5 peons, were built at Khárághoda, for the establishment of the Assistant Collector of Salt Revenue in charge of the Northern Frontier, whose head-quarters have recently been changed from Ahmedabad to Khárághoda. Brick floors have been added, at a cost of Rs. 5,862, to the bungalows along the Northern Frontier line, provided for the accommodation of the subordinate officers of the Salt Department, the object being to remedy the effects of damp, the bungalows being on the border of the Runn, and having plinths of only about 1 foot in height. Bungalows with out-houses for Sub-Inspectors at Deo Dholera and Sháhápur on this line were completed, and one for an Inspector at Urnej was commenced, but its progress was delayed owing to a difficulty in procuring fuel for burning bricks.

32. A bungalow was nearly completed at Khárághoda for the Supervising Officers of the Salt Department. It is estimated to cost Rs. 11,570, of which Rs. 8,170 have been spent, and consists of three main rooms, with a verandah all round, and the usual out-houses, with a shed for petitioners.

33. Improvements to the salt storage platform at Khárághoda were in progress, to prevent damage from rain-water.

34. The supply of water afforded by the tank constructed a few years ago, being found inadequate to meet the demands of the Khárághoda and Udu Salt works, it is proposed to increase the depth of storage in the tank by two feet, representing an addition of 114 million cubic feet to the supply. Sanction to this was received in June, too late to allow of anything more being done before the rains than the raising of a portion of the embankments, but after the rains the raising of the waste weir was commenced and completed.

The raising and strengthening of the embankments, unfortunately, could not be completed, owing to the only ground where suitable material existed being under water. This will, however, be finished before the next monsoon. The entire estimated cost of this improvement is Rs. 62,650, of which Rs. 48,180 is for the land to be submerged by the raising of the water level.

35. The Salt Custom House at Shiroda, the foundations and plinth of which were completed in 1883-84, was completed during the year, and the approach road, 1,350 feet in length, leading to the building, nearly so. The sanctioned outlay for the two is Rs. 7,742, and the total expenditure Rs. 7,561.

4.—OPIUM.

36. Additions and alterations to the Apollo Bonded Warehouse and the spirit shed, to adapt them for an Opium Warehouse at Bombay, have been carried out during the year. This building consists of a ground floor, three upper floors, and an attic. Each of the three upper floors have been divided into six rooms, three on the east, $75\frac{1}{3}' \times 12\frac{3}{4}'$ each, and three on the west, each $86\frac{1}{2}' \times 12\frac{3}{4}'$. The centre contains a well, $35\frac{1}{2}' \times 18'$, for communication, light and air, and accommodates staircases and a passage 8′ wide all round the well. The well is open from the ground to the top floor, and is covered with Taylor's glass tiles. The partitions dividing the rooms are of corrugated sheet iron, fixed on 3″ angle iron framing. A urinal and a water-room have been provided on the ground floor, and the doors on the east side have been converted into glazed windows. Four winches have been provided and fixed on the 3rd floor for raising opium chests. The original spirit shed has been altered and divided into 7 rooms for testing opium. The total outlay has been Rs. 30,430. [Outlay shown under Provincial.]

5.—MINT.

37. The quarters for the Warden of the Mint at Bombay, commenced last year, have been completed, and handed over. The total outlay has been Rs. 12,017, of which Rs. 4,759 were spent during the year.

38. To accommodate certain new machinery expected from England for the Mint, additions and alterations, which consist of a new roof over the old coining-room, masonry work connected with the construction of new tunnels, and stone bedding for girders, estimated to cost Rs. 16,452, were commenced during the year, and Rs. 1,354 spent up to the close of the year.

6.—POST OFFICES.

39. The quarters for the Post Master at Kárwár having been found insufficient and unsuitable, an upper story has been added at a cost of Rs. 2,994.

40. A new Post Office, 39′ × 21′, with runners' quarters, was erected at Mángaon, in the Kolába Collectorate, at a cost of Rs. 2,510.

7.—TELEGRAPHS.

41. A third godown for the Telegraph stores at Wádi Bandar, Bombay, was erected during the year. The shed is similar in construction to the other two sheds completed in 1883-84, and described in the report for that year. The total outlay has been Rs. 16,818.

42. The coal shed and pier, with reclamation, for the Persian Gulf Telegraph at Manora, which were commenced late in the previous year, were completed in January last, at a total outlay of Rs. 13,377. The closing in of the shed with corrugated iron screens and doors was afterwards sanctioned, and carried out during the year at a cost of Rs. 1,034.

II.—PROVINCIAL SERVICES.

43. The expenditure from Provincial and Local Funds, and Contributions, under this head was Rs. 22,49,453, of which Rs. 13,42,487 was for Original Works; Rs. 4,57,442 for Repairs; Rs. 4,33,529 for Establishment, and Rs. 15,995 for Tools and Plant.

12.—ADMINISTRATION.

44. A large number of buildings falling under this head were in progress in different parts of the Presidency during the year.

45. New Mámlatdárs' Kacheris were in progress or completed at Nadiád and Thásra in the Kaira Collectorate; Islámpur and Wái in the Sátára Collectorate; at Sholápur in the Sholápur Collectorate; Sangamner in the Ahmednagar Collectorate, and Mudebihál and Bágalkot in the Bijápur Collectorate. In Sind a new Kardarate, estimated to cost Rs. 10,388, was nearly completed at Mirpur Batoro in the Karáchi Collectorate, and a new Mukhtyárkarate at Mátli in the Hyderabad Collectorate, was completed, the construction of the latter being of a much better class than that hitherto adopted for such buildings in Sind, all the woodwork being teak and the roof terraced.

46. Record accommodation has been provided at the Mámlatdárs' Kacheris at Anklesvar in the Broach Collectorate; Dholka in the Ahmedabad Collectorate; Pátan in the Sátára Collectorate; Sholápur and Karmála in the Sholápur Collectorate; and a large fire-proof building, for the preservation of the valuable State and Alienation Records, estimated to cost Rs. 1,14,335, was commenced at Poona, and an outlay of Rs. 5,000 incurred during the year.

47. The building for the accommodation of the Assistant Collectors and their offices at Karáchi, described in last year's report, was completed during the year at a total outlay of Rs. 15,870. A treasure-room was constructed for the Collector's Kacheri at Sukkur for Rs. 5,342; and the Treasury Guard-room of the Hazri Bungalow at Sátára, being in a dangerous state, was pulled down and rebuilt at a cost of Rs. 2,974. The roof of the District Bungalow at Sirsi, which is a very old building, was entirely renewed.

48. The Collector's Bungalow at Alíbág, commenced in 1882-83, was completed during the year at an outlay of Rs. 21,406; and a Collector's Bungalow commenced at Broach, and nearly completed, the outlay during the year being Rs. 21,933. A bungalow was also provided for the Assistant Collector, Panch Maháls, at Godhra, at a cost of Rs. 8,148.

49. The following works were carried out during the year at the several Government Houses:—At Parel, quarters have been constructed for 10 servants and the ground raised, at an outlay of Rs. 5,612; and a new office and quarters erected for the Telegraph Master and Signallers, in lieu of the old building, which was ill adapted for the purpose, and inconveniently situated, the expenditure during the year being Rs. 7,839. At Ganesh Khind, quarters for 40 syces were constructed at a cost of Rs. 5,700; and at Mahábaleshvar, offices and quarters for the clerks attached to the staff, and stables for the Body Guard horses, at a total outlay of Rs. 10,312.

50. At Baroda, the quarters and stables for the Body Guard, and the new offices for the Residency, commenced in 1883-84, were completed during the year, the outlay being Rs. 4,924 and Rs. 41,490, respectively.

51. The adaptation of certain ancient buildings at Bijápur, to fit them for Public offices and Officers' residences, was so far completed as to admit, as was anticipated, of the transfer

of the head-quarters of the Collectorate from Kaládgi to Bijápur in March 1885. The unfinished works in connection with the several buildings are still in progress. The estimated cost of the scheme is Rs. 3,03,856, and the expenditure up to the end of 1884-85 has amounted to Rs. 2,66,201.

52. The land round the new Distillery at Násik, with some subsidiary buildings, was purchased at a valuation of Rs. 3,025, and the whole Survey No. 816, with the buildings, &c., thereon, is now the property of Government.

53. Additional accommodation for Stallions at Lárkhána, in the Shikárpur Collectorate, was provided at the cost of Local Funds, the total outlay being Rs. 2,727.

14.—LAW AND JUSTICE.

54. New Subordinate Judges' Court-houses were in progress or completed at Bassein in the Thána Collectorate; Olpád in the Surat Collectorate; Borsad in the Kaira Collectorate; Hubli in the Dhárwár Collectorate; and Jalgaon and Bhusával in the Khándesh Collectorate. Certain additions and alterations were carried out to the Collector's Kacheri at Shikárpur, to render it suitable for the District and Subordinate Judges' Courts; and a very good court-room was added to the existing Court-house at Naushahro in the Hyderabad Collectorate.

55. A new Court-house for the District Judge at Belgaum, estimated to cost Rs. 40,268, was commenced during the year, and Rs. 9,990 spent up to the close of the year. Special repairs of an extensive character, estimated to cost Rs. 11,050, were commenced to the Adálat and subsidiary buildings at Kaira, on which Rs. 5,993 were spent during the year.

56. At Bombay, a new building, designed in the Gothic style, by Mr. J. Adams, the Architectural Executive Engineer, and estimated to cost Rs. 3,87,361, was commenced on the Cruickshank Road, on the Esplanade, for the accommodation of the Police Magistrates' Courts, which are now accommodated in a hired building, found to be in every way unsuitable. The building measures 186′ 9″ in extreme length, and 100′ 3″ in extreme width, with its front facing the Cruickshank Road. The ground floor has a carriage porch in front, behind which is placed the principal staircase. The space on the left of the staircase room is reserved for four separate lock-ups for natives and Europeans and women, and a disorderly lock-up and a room for stolen property. On the left of the lock-ups there is a room for prisoners, a staircase leading to the court-rooms on the first and second floors, and a guard-room in rear of the staircase. A room for European constables is provided in the rear of the main staircase, the space on the right of which is set apart for a messengers' and record-room. A corridor, 10 feet wide, is provided in the front, rear, and right sides of the building. The first floor is for the Third Presidency Magistrate's Court. The court-room measures 66′ × 50′, and is situated on the left of the main staircase. There are also provided on this floor two rooms for the Magistrate, a room for solicitors and barristers, a clerks' room, and a waiting-room for witnesses. The second floor is reserved for the Chief Magistrate's Court. On this floor the court and other rooms are disposed in the same manner as on the first floor. The main staircase room is surmounted by a third floor, which provides quarters for a European constable. There is also a third floor to each of the corner turrets at the right end of the building, in one of which there is a cookroom, and in the other a servants' room for the European constable. There are two out-houses: one of them a latrine, divided into four parts, with 6 seats in each, for the use of Natives and Europeans, and the other is for servants.

The outer facing of the main building is to be of Kurla stone, with Kurla and Porbandar stone dressing; that of the out-houses is to be of Kurla stone rubble. The main building and out-houses were commenced in November 1884; and the foundations filled in and plinth raised during the year, the outlay in which amounted to Rs. 26,514.

57. The stone pitching to the Adálat bank of the River Tápti at Surat, described in last year's report, was nearly completed during the year, in which the outlay amounted to Rs. 10,844.

15.—ECCLESIASTICAL.

58. The Church at Parel, Bombay, described in last year's report, has been completed, and handed over to the Church Committee. The total outlay has been Rs. 30,496, of which Rs. 23,486 were spent during the year.

59. A small Church at Dhárwár, on a design furnished by the Architectural Executive Engineer and Surveyor, was commenced during the year. It is estimated to cost Rs. 10,197, half of which amount was raised by private subscriptions, Government contributing the other moiety. It will afford accommodation for 100 people. The foundations have been filled in, and the plinth and a portion of the superstructure raised. The work has now been suspended, pending the discussion of some suggested alterations in the design.

60. During the latter part of the year, funds were made available for the construction of a Church at Deoláli, for the use of the Troops; but the work was not proceeded with, as

the site originally selected proved unsuitable, no good foundations being obtainable; another site will be selected.

61. The new Church at Poona for the Society of St. John the Evangelist, described in last year's report, has been in progress during the year. There was great delay in getting out from England yellow face bricks, without which the work could not proceed, but the superstructure has now been completed, and the roof is in course of erection by the Mission Workshop. The floor and fittings of the church are being procured from England. The total expenditure up to the close of the year has been Rs. 24,024.

62. A Roman Catholic Chapel, affording accommodation for 148 seats, and estimated to cost Rs. 14,377, was commenced at Baroda, and about half completed during the year. The cost will be met from private contributions, assisted by a Government grant-in-aid. The outlay during the year has been Rs. 8,004.

63. The new cemetery at Wanouri, Poona, alluded to in the last report, has been completed during the year, consecrated and taken into use. The total outlay has been Rs. 28,820. An addition of about 7 acres has been made to the new cemetery at Karáchi, which has been enclosed by a stone wall, at a cost of Rs. 3,845.

64. Quarters for the two Chaplains attached to St. Thomas' Cathedral, Bombay, the need for which was very much felt, and had been frequently pressed on the attention of Government, were commenced during the year. The building consists of a ground floor and upper floor, and affords the following accommodation for each Chaplain:—On the ground floor, a drawing-room 22′ × 18′, a dining-room, 20′ × 88′, a godown, a dispense-room, a study 12′ × 12′, and a staircase-room 13′ × 8′; and on the first-floor, two bed-rooms, 22⅛′ × 18½′, and 20⅛′ × 18½′, two dressing-rooms, 12¾′ × 18½′ and 11¼′ × 8⅜′, and 4 bath-rooms. There is a verandah, 8½′ wide, in front and on two sides, and one 6′ wide in rear. There are porches and staircases to each set of quarters, and a servants' staircase in rear, common to both quarters, 2½′ in width. Each quarter is to have a cook-room, four rooms for servants, a coach-house and syces' room, and stables for two horses. The cost is estimated at Rs. 56,375, or Rs. 28,188 for each quarter. The foundations and plinth of the main building have been completed during the year, in which the outlay has been Rs. 15,003.

16.—JAILS.

65. The work of enclosing a waste piece of ground on the south side of the House of Correction, Bombay, and the additions and alterations to the Jail at Godhra, described in last year's report, were both completed during the year, and the latter occupied. The total outlay has been Rs. 3,088 and Rs. 24,851, respectively.

66. The old jail at Sátára, built about 20 years ago, principally by Chinese convicts, having been for some years condemned as insecure, a new jail was commenced during the year on the site of the old one, the estimated outlay being Rs. 1,01,011. The new jail is designed to accommodate 83 male and 29 female prisoners, and 18 male and 5 female prisoners under trial, and 4 juveniles. It consists of a main compound wall, 15 feet in height and 2 feet in thickness, and partition walls between the several wards, 7 feet in height. The accommodation for male prisoners consists of a barrack, 142 feet by 16 feet, for 56 prisoners, one barrack, 45 feet by 18 feet, for prisoners under trial, 2 blocks of 15 and 12 cells respectively, and a workshed, 142 × 20 feet. For females there is a barrack, 61 × 16 feet, for 24 prisoners, and 2 blocks of 5 cells each, one of the latter being for females under trial. For juveniles 4 cells have been provided. The subsidiary buildings consist of a hospital, a cook-house, and latrines. The above buildings are all within the jail enclosure. The offices and quarters for establishment are outside the main wall, and will be enclosed by a dwarf wall. They consist of offices for the Superintendent and Jailor over the main gate, a store-room, guard-room, Jailor's quarters, and quarters for the Hospital Assistant.

Work was commenced in September 1884, and by the close of the year the main wall and buildings for the establishment outside, were well advanced. The outlay for the year has been Rs. 27,295.

67. In 1878, it was decided to establish two central Reformatories for Juveniles agreeably to the Reformatory Schools Act (V. of 1876), one for Gujarát, and the other for the rest of the Presidency, the latter to be located at Poona, so soon as the state of the finances permitted, and in 1882 this decision was so far modified that the David Sassoon Reformatory at Bombay, which at first it was intended to abolish and merge into the proposed new central Reformatory to be established at Poona, was allowed to remain as a separate institution. Plans and estimates were prepared by this Department for the Poona Reformatory, amounting to Rs. 76,644, and were sanctioned, and a grant provided during the year. The Reformatory is designed on the radiating system, each row of cells having its corresponding workshed, so as to admit of the classification and segregation of the boys. The project embraces the following:—8 barracks, each containing 12 cells, 10 × 6 feet, with an average height of 12 feet; 6 worksheds, 51′ 9″ × 12′, 2 store-rooms, 52 × 12 feet, and a cooking shed. These buildings are contained within an inner circle; outside this circle, and within the enclosure wall, are the hospital, containing two wards, one 35 × 12½ feet, and the other 15 × 12½ feet, a dispensary, 15 × 12½ feet, a surgery, 8 × 12½ feet, latrines, and bathing platforms

Forming part of the wall is the entrance gateway, flanked by office and storeroom, each 15×20 feet. Outside the enclosure wall are the Manager's quarters, the Hospital Assistant's quarters, and quarters for subordinate establishment. The site selected is at Yeraoda, in the vicinity, distinct and separate from the Deccan Central Jail near Poona. Some progress has been made during the year with the masonry work of the enclosure and in collecting material.

68. An upper story to the main entrance of the Yeraoda Jail has been in progress during the year. This addition doubles the existing office and store accommodation, and is estimated to cost Rs. 3,788.

17.—POLICE.

69. Lines for the accommodation of the Police were in progress during the year at Broach, Kaira, Godhra in the Panch Maháls, Ahmedabad, Belgaum, Yellápur in Kánara, Dápoli in the Ratnágiri Collectorate, Pen and Roha in the Kolába Collectorate, Hungund in the Bijápur Collectorate, Khed and Junnar in the Poona Collectorate, Shetphal, Vellápur and Kurduwadi in the Sholápur Collectorate, and Násik.

70. The lines at Broach, Kaira, Godhra, Ahmedabad, Yellápur, Násik, and Belgaum, have been described in the last and previous reports; and it, therefore, only remains to note the progress made during the year. At Broach 2 blocks, each containing 28 rooms, were completed, and 2 more nearly so, as well as the stables, the expenditure during the year having been Rs. 39,943. At Kaira five blocks, to accommodate 20 men each, have been completed, and the sixth will be ready before the next monsoon, the total outlay to close of the year having been Rs. 21,249. The block of lines for 26 men at Godhra has been completed for Rs. 4,756, and occupied. At Ahmedabad additions and alterations, which consisted of converting the rooms in one block into married men's quarters by partition walls at back of each room, constructing sinks for bathing-places, and a screen wall in the verandah, estimated to cost Rs. 2,880, were sanctioned in January 1885, but not completed for want of materials and workmen, the latter being fully engaged on other important works. The estimate for the lines, including additions and alterations, is Rs. 21,013, and the total outlay to the close of the year Rs. 19,036. The lines at Belgaum and Yellápur were completed, the total outlay having been Rs. 47,162 and Rs. 6,229, respectively. Those at Násik have been pushed on fairly well, in spite of much difficulty with the workmen and in obtaining materials. Some experiments that were made in building pillars of concrete, instead of brick and lime, gave good results. The concrete pillars, 7 feet high, were tested in a fairly severe manner, with heavier weights than they would have to bear, and showed no sign whatever of strain. Much economy would result from their use, as 100 cubic feet of concrete in pillars cost not more than Rs. 21, against Rs. 28 for brick or stone and lime masonry. The expenditure has been Rs. 19,527.

71. Of those commenced during the year, the lines at Dápoli, which is the head-quarter station of the táluka, are in two blocks, affording accommodation for 50 men. The work on these was confined chiefly to the collection of materials, on which Rs. 5,000 were spent. The lines at Pen and Roha in the Kolába Collectorate, affording accommodation for 16 and 14 men, respectively, were completed. At Hungund, a block for 7 men was built near the Mámlatdár's Kacheri, at a cost of Rs. 2,348. At Khed, quarters for 7 men have been constructed for Rs. 2,500, and at Junnar quarters for 8 men have been nearly completed. The Police lines at Shetphal, Vellápur, and Kurduwadi, in the Sholápur Collectorate, have all been designed on the same plan. The accommodation provided consists of one Police line and one lock-up; the former affording accommodation for one head constable and six sepoys; the size of the room for a sepoy being 10×8 feet, and that for the constable 10×10 feet, the height being 9′ 3″. A verandah, 5 feet wide, is provided in front, in which is the necessary bathing accommodation. The lock-up contains 2 rooms, one 16×12 feet for male, and the other 8×12 feet for female, prisoners; it has also a 5 feet verandah with bathing accommodation. The lines at Shetphal and Yellápur have been completed for Rs. 2,829 and Rs. 3,902, respectively, and that at Kurduwadi nearly so, the outlay during the year having been Rs. 2,903.

18.—EDUCATIONAL.

72. The following buildings, described in last year's report, were completed during the year:—General Library and Reading-room at Thána, for Rs. 3,989; new Laboratory for the Elphinstone College, Bombay, for Rs. 18,476; St. John's School at Máhím, for Rs. 31,415; out-houses for the Alexandra Native Girls' English Institution, Bombay, for Rs. 2,731, from contributions; additional accommodation for students at the Deccan College, Poona, for Rs. 32,366; High School at Belgaum, for Rs. 11,624; Tálukdári School-house at Wajeria, in Rewa Kántha, for Rs. 13,540; and the Local Funds school-houses at Dohad in the Kaira Collectorate, for Rs. 3,968; Surkej in the Ahmedabad Collectorate, for Rs. 3,837; Hippargi in the Bijápur Collectorate; Akulkop in the Sátára Collectorate, for Rs 3,444; and Faizpur in the Khándesh Collectorate, for Rs. 10,547.

73. The following are still in progress:—High School at Broach, which has been completed so far as the shell goes, and on which the expenditure up to the close of the year has been Rs. 30,377. The Cathedral High School at Bombay, of which the west wing,

centre feature, and ground-floor of the east wing have been completed and handed over, the outlay during the year being Rs. 3,592, and the total outlay Rs. 1,33,848. And th Local Fund School-house at Bhusával, in the Khándesh Collectorate, of which the superstructure was almost completed, and the roof timbers in position; the total outlay to end of th year being Rs. 8,301.

74. Of the new buildings commenced during the year, prominent mention must be made of that for the Indo-British Institution at Bombay. A site for the building with Church attached, has been granted on the Market Road on the Esplanade, to the south of the compound of the School of Art; it has a frontage of 220 feet, and a depth of 410 feet, the superficial area being about 10,000 square yards. The school-building will occupy a position on the west front of the site, and the church (which it is proposed to construct hereafter) at the north-east or south-east corner of the same site. The total estimated cost of the school-building is Rs. 1,12,728, and of the church about Rs. 30,000. Half of the estimated cost of the school-building, Rs. 56,000, has been provided by the School Committee, and raised partly from the sale of the existing buildings and partly from public subscriptions; and an equal amount has been contributed by Government from Provincial funds; Government have also granted the site, valued at Rs. 1,20,000, free of cost.

The design of the school building has been prepared by Khán Bahádur Muncherjee Cowasjee Murzbán, Assoc. M. Inst. C.E., Executive Engineer at the Presidency, and is in the Domestic Gothic style. There is to be a main building, with two ranges of out-offices attached. The main building forms three sides of a rectangle, of which the side facing west is to be 172 feet long, and those facing south and north are to be 94½ feet long each. The building is to consist of a ground-floor and an upper floor, and the walls will be of sufficient thickness to allow of the addition of a second floor, if required. It is to be divided into two portions, that on the south for the boys, and on the north for the girls. In the middle of the building, on the ground-floor, are quarters for the Head Master and Head Mistress, each set having a sitting-room, $16 \times 14\frac{1}{4}$ feet, a dining-room, $19 \times 14\frac{1}{2}$ feet, a bed-room, $18\frac{3}{4} \times 14$ feet, a bath-room and a water-closet. On either side of these quarters there are two class-rooms, one $25' \times 20\frac{1}{2}'$, and the other $33\frac{1}{2} \times 25$ feet. In the north and south wings there are dining-rooms, 40×25 feet each, and separate staircases, 4 feet wide, for boys and girls. There are to be verandahs, 8 feet wide, on the east, south, and west sides of the building, to protect the rooms from sun and rain. Two circular staircases, 3 feet diameter, are provided in the west verandah, to allow of direct communication between the dormitories and the Master and Mistress' quarters. On the first floor, which will be utilised exclusively for sleeping accommodation, room will be provided for 134 beds, as also quarters for matrons on both sides of the building.

The walls generally are to be built of rubble stone and lime masonry, faced with random stone. The dressings are to be in Porbandar-stone. The main building is to be connected with the out-buildings by means of covered passages. There are to be two ranges of out-buildings, one on the boys' side and the other on the girls': in these accommodation is to be provided for servants, and children's bath-rooms, cook-rooms, &c., and latrines. Outlay during the year Rs. 975.

75. The Vishrámbágh Palace at Poona, used partly as a Government High School and by other Government offices, having been partially destroyed by fire in 1879, it was proposed to restore the building, as one possessing historical interest, to its former condition and appearance as far as possible; and the people of the city of Poona, who were much interested therein, having subscribed Rs. 11,147 towards this object, a project was called for. The plans and estimates were submitted in February 1883, and amounted to Rs. 51,737; these were sanctioned, but funds could not be made available in 1883-84. During the year a provision of Rs. 31,000 was made, of which Rs. 11,000 were from private contributions, and the restoration of the front quadrangle was proceeded with. The native character of the construction is being adhered to. The front will be carried on carved teakwood posts and ornamental brackets, and the interior on square cut teak posts and beams filled in with masonry and brick-work. The masonry work has been given in contract, and the foundations, plinth, and most of the superstructure of the ground-floor has been completed. The timber work is being executed departmentally; that for carved work has been procured from Kánara, and the carving has been mostly done by petty contract. The timber for square work is the ordinary Moulmein teak from Bombay, sufficient of which has been brought and prepared for the ground-floor, and is now in course of erection. The outlay during the year has been Rs. 5,103. When completed, the entire building will be used for the High School, thereby greatly increasing the accommodation.

76. A Practical Chemistry-room and Model-room for the College of Science at Poona has been in progress. This addition consists of a plain, detached building of 3 rooms, in rear of the main college. The walls are of coursed rubble masonry, carrying a Mangalore-tiled room, and the floor, which is paved with cutstone, is provided with drains to carry off acids and chemicals. The estimated cost is Rs. 8,794, and the outlay during the year Rs. 4,467.

77. An upper story, containing six lofty and well-ventilated class-rooms, each 24×16 feet, with a wide verandah in front and rear, is being added to the Náráyan Jagannath High School at Karáchi, at an estimated cost of Rs. 11,342, of which Rs. 8,771 have been expended during the year.

78. A high school building has been completed at Shikárpur for Rs. 20,914, of which Rs. 10,490 were from contributions; and buildings for a Model Farm at Hyderabad at a cost of Rs. 15,486.

79. And the following new Local Funds school-houses were in progress, or completed, during the year :—A school-house for 200 boys at Bowla in the Ahmedabad Collectorate; a Hindustáni school for 125 boys at Bágalkot, and a school-house for 100 boys at Honvád in the Bijápur Collectorate; a school-house for 100 boys at Medha in the Sátára Collectorate, which was constructed out of Provincial funds at a cost of Rs. 2,628, in lieu of the original school-house, which, being close to the Kacheri, was converted into a record-room for the Mámlatdár; a school-house for 400 boys at Yával in the Khándesh Collectorate, estimated to cost Rs. 17,050, of which Rs. 2,298 were expended during the year; another for 150 boys at Amalner in the same Collectorate, estimated to cost Rs. 7,950; a Hindhi-Sindhi Girls' School was commenced at Hyderabad at an estimated cost of Rs. 5,300, of which one-half was expended during the year; and additions and alterations were carried out to a building purchased for the Anglo-Vernacular School at Lárkhána, in the Shikárpur Collectorate, at a cost of Rs. 3,825.

80. Additions and alterations to the Convent Day School at Poona, a private building, were in progress from contributions, at an estimated cost of Rs. 8,655, of which Rs. 1,986 were expended during the year; and the additions and alterations to St. Mary's School, alluded to in the last report, have been completed at an outlay of Rs. 5,023, from contributions.

19.—MEDICAL.

81. Under this head the only large work in progress during the year at Bombay was the Cáma Obstretric Hospital, described in the last report, of which the superstructure of the main building has been raised to the level of the first floor, the expenditure during the year being Rs. 34,354.

82. Additions and alterations have been carried out at all the large hospitals, and may be briefly described as follows :—

83. At the European General Hospital, the old hooping-cough and measles ward has been converted into quarters for the Nursing Sisters, by adding an upper story to the building, which is 12 feet in height under the tie beam, and provides 7 rooms, with an open verandah, 6¼ feet wide, on three sides; and a portion of the old disinfecting building has been converted into measles wards, by adding a verandah, 4½ feet wide, on the east side, and making a few other alterations. The outlay on the above has been Rs. 11,442.

84. At the Jamsetjee Jejeebhoy Hospital, the ventilation of the upper story wards has been improved by adding continuous ridge ventilators over the roof, by substituting Mangalore tiles for the corrugated iron covering, and by making openings in the walls of the wards and verandahs, at an outlay of Rs. 7,161. The surface drainage of the hospital, which was so defective that storm water could not easily pass off the grounds, has been remedied by filling up the low-lying ground and sloping off the whole compound, so as to allow the water to pass off freely into the road-side drains, and by the construction of open cemented masonry drains for carrying off the water from different parts of the compound into the adjoining Municipal drain. The outlay has been Rs. 12,313. The light in the operating theatre having been found insufficient, it has been proposed to remove a portion of the corrugated iron roof of that room, and to substitute Taylor's Patent glass tiles, to secure more light from the north side. During the year a large portion of the glass-tiled roof has been completed, and the remainder will be taken in hand as soon as the tiles ordered out from England arrive. The floors of wards Nos. 3, 4, 6, 7, 8, 10 and 13, which are of earth, and objectionable in every way, as absorbing impurities of all kinds, are being paved with Minton tiles, which it is expected will be completed by the end of May. The expenditure on the above two works during the year has been Rs. 6,417, out of an estimated outlay of Rs. 12,530. And lastly, it having been strongly represented that very great inconvenience resulted from the present practice of giving out to private individuals the washing of the soiled clothing of the inmates of this large hospital, and very great risk to the public health of the City of Bombay by the soiled and infected clothing being washed and dried at the public washing-places, a laundry was sanctioned, and has been constructed, with the necessary arrangements, within the compound of the hospital. The building measures 42 × 10 feet inside, and has five fireplaces; a portion has been set apart for the exclusive use of incurables. The cost has been Rs. 4,061.

85. At the Goculdass Tejpall Hospital, the small-pox ward building has been converted into receiving rooms for male and female out-door patients, the cholera ward building into a dispensary, and the side verandahs have been partly enclosed to give two rooms for Medical officers. A covered passage, with a dividing railing, has been constructed to connect the two buildings. And lastly, the dead-house being too near the public road, the verandahs have been enclosed with wire gauze framework with doorways, and, to give more light, glass tiles have been fixed on the roof. The total outlay on the above has been Rs. 4,506.

86. At the Lunatic Asylum at Colába, the existing Apothecary's quarters were converted into a recreation-room for the patients; and the quarters of harmless patients converted into the Apothecary's quarters, at an outlay of Rs. 1,707.

87. At the Sassoon Hospital at Poona, the old latrines in the upper floor, being inside the main building, were found to be offensive, and had to be closed at much inconvenience. New latrines are now being built, which are detached from the main hospital, but accessible by means of a covered gallery. The estimated cost of the work is Rs. 4,616, and the outlay during the year Rs. 858.

88. With the Lunatic Asylum at Ratnágiri, described in last year's report, considerable progress was made during the year; 6 barracks for male and female lunatics, 3 exercise sheds, padded room for female lunatics, guard-rooms, hospital servants' quarters, peons' and servants' quarters, having been nearly completed, and all the other buildings being also well advanced. The total expenditure up to the end of the year amounted to Rs. 40,060, against the estimated cost of Rs. 92,345 for the land and buildings.

89. Dispensaries have been completed, or are in progress, from Local Funds, or Contributions, at Bhiwndi and Umbargaon in the Thána Collectorate, the outlay on which has been, respectively, Rs. 10,557 and Rs. 9,999; Háveri and Navalgund in the Dhárwár Collectorate, costing Rs. 15,870 and Rs. 3,596; Honávar in the Kánara Collectorate, which is nearly finished, the estimated cost being Rs. 3,620; Satána and Yeola in the Násik Collectorate, which are in progress, and the estimated cost of which is Rs. 6,353 and Rs. 6,942; and Rohri in the Shikárpur Collectorate, which has been completed at a cost of Rs. 2,248.

20.—MISCELLANEOUS.

90. The new building for the Government Central Press at Bombay, described in the last report, has been in progress, and the masonry work of the ground-floor, and the flooring of the first floor, have been completed. The total outlay has been Rs. 1,80,102, of which Rs. 1,00,370 were expended during the year.

91. One of the experimental block of warehouses in the neighbourhood of the Nadiád Railway Station, to provide storage-room for exports and imports, alluded to in the last report, has been completed during the year, at an outlay of Rs. 4,815, from Local Funds. The experiment seems likely to be a success, as the rents obtained for the first year give more than 7 per cent. on the cost, while the rooms have been sublet at a considerable advance. The want of storage-room near Railway stations is much felt, and tends to hamper trade; the matter is, therefore, an important one, and deserving of consideration.

92. The additions and alterations to the Photozincographic Buildings at Poona, briefly sketched in last year's report, have been completed during the year at an outlay of Rs. 2,914.

II.—COMMUNICATIONS.

I.—ROADS.

93. The total outlay on Communications was Rs. 34,00,307, of which Rs. 11,60,257 was spent on Original Works; Rs. 16,54,262 on Repairs; Rs. 5,59,174 on Establishment; and Rs. 26,614 on Tools and Plant.

94. A map in three sheets is attached, on which are shown the principal lines of road in Gujarát and the Deccan in progress during the year.

95. In the Thána Collectorate, the Provincial road from Jawhár to Dáhánu (1st section from Dáhánu to Charoti), described in the last report, was in progress, and the earthworks for 12 miles, and culverts and drains for 5 miles finished, and 7 miles of the road, and the branch to Sawta bandar, one mile in length, were opened to traffic. Outlay during the year, Rs. 27,684.

96. The metalling of the Local Funds road from Máhím to Pálghar, commenced in 1883-84, was completed at an outlay of Rs. 10,643.

97. The 1st and 2nd sections of the Local Funds road from Bhiwndi to Váda, described in the last report, were in progress. The earthwork, culverts, and drains on the first section were completed, and the first 8 miles murammed, and opened to traffic. About three-fourths of the earthwork of the second section, commenced during the year, have been completed, and fair progress made with the culverts and drains. This road will be a feeder road to the Great Indian Peninsula Railway, and there is already a large amount of traffic on the section opened. The total outlay on the two sections to the close of the year has been Rs. 82,354.

98. The culverts on the road connecting the Pálghar Railway station and the Chahad Khind road were completed during the year at a cost of Rs. 4,574, from Local Funds. This section, together with a short length of road from the station to the railway-crossing, complete a road up to the east slope of the Chahad Khind.

99. In the Surat Collectorate, the Local Fund road from Surat Railway station to Ashwanikumar has been completed, with the exception of the gravelling and consolidation; the outlay during the year being Rs. 5,386, and the total outlay Rs. 10,217.

100. The bridges, culverts, and drains on the road from Wadoli to Kím Railway station have been repaired and rebuilt, at an outlay of Rs. 3,199 from Local Funds.

101. The road from Surat to Bárdoli in British territory has been completed, as described in previous reports, with the exception of gravelling and consolidating about 1½ miles, suspended pending the decision of the question of constructing a railway along this line. The total outlay has been Rs. 98,381 from Local Funds.

102. Four stone dips, each 75 feet in length, and one metalled dip, 800 feet in length, have been completed, and materials for two bridges collected, on the road from Olpád to Kadrama, on which the total outlay has been Rs. 14,918, and the outlay of the year Rs. 3,499, from Local Funds.

103. In the Broach Collectorate, a small outlay was incurred during the year on the Local Funds road from Anklesvar to Bhorebhatta, and the road from Broach to Dehej, described in the last report. The first was completed before the monsoon of 1884, but a high flood in the Narbada overflowed the country through which it passes, and washed away a large portion of it before the road was declared open to traffic. The total outlay has been Rs. 32,145, and the expenditure of the year Rs. 1,524. A further expenditure of Rs. 13,780 is requisite to repair the damage done by the flood. On the second the outlay of the year has been Rs. 4,789, and the total outlay Rs. 21,057. This road, 25 miles long, with one bridge, is raised by earth dug out of the side ditches to an average height of one foot above the surrounding country. The ground over which it passes is entirely black soil, and a shower of rain makes it impassable for several hours; in the hot weather the soil cracks from the heat, and becomes full of large fissures, but these do not appear to inconvenience the local traffic.

104. In the Kaira Collectorate, the road from the Dákor and Kapadvanj line towards Baad and Modása, described in the last report, and the road from Baad to Bibipara, have been in progress. The two cleared lines to Sunda have been completed, and are now used for traffic, while the bridged, drained and metalled portion (14½ miles) is in progress. The Mohar bridge, also two out of the four smaller bridges, and the majority of the drains and culverts, have been completed. The formation width of the road is 20 feet, and the embankments have been practically completed, and more than half of the stone metal has been prepared. This road, with its branches, will open up a large tract of country, including a great deal of improvable jungle with a Bhil population. There is already a considerable trade in wheat, oil-seeds, mowra, &c., and this is likely to develop rapidly with road facilities, aided by reduced transit duties. The latter point has not been lost sight of, and His Highness the Mahárája of Idar has already agreed to the abolition of the duties for the portion of the route within his territory, and further concessions may be hoped for in the future from other chiefs. The outlay on the two roads during the year has been Rs. 28,696 and Rs. 3,884, respectively, and the total outlay on the first Rs. 75,676.

105. On the road from Barejri Railway station to Naika, described in the last year's report, 9 miles have been metalled with kunkur and bricks during the past year, and the only remaining work is the spreading of bricks and kunkur for the last five miles, and this will be completed during the coming monsoon. The outlay on the two sections of this road in the Kaira and Ahmedabad Collectorates during the year has been Rs. 7,857 and Rs. 4,977, respectively, and the total outlay, including compensation for land, Rs. 63,927 and Rs. 23,677, from Local Funds.

106. The metalling of portions of roads in the Kaira Collectorate, has been completed during the year at a total outlay of Rs. 10,478 from Local Funds; also the metalling of portions of road near Mehmadabad and Kaira for Rs. 9,205; and half of the road from Nadiád to Mahuda has been metalled at an outlay of Rs. 12,260.

107. In the Panch Maháls Collectorate the road from the railway station at Godhra to the Kálol road has been opened to traffic during the year, but the stone metal has still to be spread. The total outlay has been Rs. 18,112 from Local Funds.

108. The metalling of the main road in the town of Godhra was practically completed in 1883-84, but there was a small outlay during the year. The total cost has been Rs. 4,827 from contributions.

109. In the Ahmedabad Collectorate, the metalled road between Dhandhuka and Ránpur Railway station was in progress. The drains, culverts, dips, and earthwork were completed in 1883-84, and during the year the metal was spread and consolidated over the entire road, with the exception of two miles, which will be done during the next rains. In the monsoons of 1883 and 1884 this road was much damaged by heavy rains occurring simultaneously with the overflowing of the river, and the repairs of these damages have delayed the completion of the road. The outlay during the year has been Rs. 15,177, and the entire outlay Rs. 77,326.

110. A new road, seven miles in length, has been constructed from the town of Dholera to the Chilkari Bandar, which has been recently opened for the landing and shipping of goods, in lieu of the Khun Bandar, the closing of which was necessitated owing to the inconvenience caused to the trade by the silting up of the Khun Creek. The roadway is 16 feet in width at top, with side slopes of 1 to 1, and 9 timber pile bridges have been erected. The outlay on the whole has been Rs. 13,184 from Local Funds.

111. In the Southern Division, the approaching completion of the system of Railways, West Deccan, East Deccan, and Hubli-Marmagão, has necessitated a careful consideration of the subject of feeder roads to these railways; something of actual work in this direction has been done, and more in the way of discussion of proposals; sanction has been obtained to projects previously prepared, and plans and estimates for other proposals put in hand.

112. The East Deccan Railway runs roughly north and south from near Sholápur, *viá* Bijápur and Bágalkot, to Gadag, crossing the large rivers, Bhima, Don, Krishna and Malprabha. Work on direct feeders to this Railway, as under, has been done :—

113. The road from Indi to Indi Railway station (Bijápur District), 3 miles long, muram surface, with paved dips to nalas, has been commenced.

114. The road from Bijápur to Honvad, 22½ miles long, a section of the projected main arterial line from Ratnágiri on the coast, *viá* Amba Ghát to Kolhápur, Miraj, Athni, and Honvad, to Bijápur on the Railway, and on to Shindgi, alluded to in the last report, has been completed, the surface murammed, and all nálas have been provided with either bridges, drains, or paved dips. It cannot fail to be of great service as a Railway feeder, traversing as it does the Don valley. The total cost has been Rs. 58,484, of which Rs. 11,015 were expended during the year.

115. The road from Bágalkot to the Railway station, ¾ mile long, has been completed at a cost of Rs. 4,095.

116. The road from Muddebihál (east of the Railway) to Chimalgi (west of the line), in the Bijápur District, crossing the rail at Almatti on the Krishna, is in progress, and is 19 miles long. The estimated cost is Rs. 85,906, and the expenditure up to the end of 1884-85, Rs. 32,386.

117. The road from Kaládgi to Bágalkot (station), Bijápur District, 18 miles long, with murammed surface and bridges and drains, has been completed at an outlay of Rs. 44,579.

118. The road from Bágalkot, eastward, to Hungund, Bijápur District, 27½ miles long, with all the necessary bridges and drains, and murammed surface, has been completed for Rs. 66,996. The Malprabha river is crossed, some 15 miles east of Bágalkot, by a paved dip in the fair season; and a wire rope ferry, for use in the monsoon, is to be provided.

119. The road from Guledgud to Katgeri station is in progress. The estimated cost is Rs. 34,274, of which the expenditure up to the end of 1884-85 has been Rs. 8,414.

120. Projects for connecting all the large railway bridges, which are to be made available for cart traffic, are in hand.

121. The West Deccan Line, which enters the Southern Division at or near Miraj, and runs *viá* Chikodi (Road station), Gokák (Road station), and Belgaum, to Londé, its junction with the Hubli-Marmagão Railway, is by no means so well off for feeders as the East Deccan; there is all the year round communication from Miraj station to Kolhápur, but nowhere else between Miraj and Belgaum, a distance of some 80 miles, is it crossed by a road passable at all times, and nothing has been done during the year to provide feeders (that is, of actual work); but, from Belgaum, the road, 54 miles, to Panchgaon, in the direction of Kaládgi, has been completed at a total cost of Rs. 1,49,501, of which the expenditure in 1884-85 has been Rs. 54,485; and sanction has been accorded to two main feeders crossing the railway at Chikodi Road and Gokák Road; these feeders are indispensable, and it is to be hoped will be rapidly proceeded with to completion.

122. For the Hubli-Marmagão Railway, running due west from Gadag, *viá* Hubli, Dhárwár, Alnavar and Londé (Junction), and the Tinai Ghát, a feeder from Dhárwár, 16 miles northward to Saundatti (in Belgaum), has been commenced, at an estimated cost of Rs. 33,512, of which the expenditure in 1884-85 has been Rs. 10,360; and the road from Alnavar (station) north to Bidi and Khánápur (station on Belgaum-Londé Line), has been improved, by the building of two bridges over troublesome nalás, at a cost of Rs. 6,848 and Rs. 9,600. This railway is, however, well fed by existing roads at Gadag, Annigeri, Hubli, Dhárwár, Alnavar (where a good road connects the railway with the Kánara system of roads), and Londé, and proposals have been submitted for connecting the various stations with the roads existing in the vicinity.

123. Of the other roads in the Southern Division, the road from Nipáni to Dájipur, alluded to in former reports, has been nearly completed, with the exception of several unbridged rivers and nalás both above and below the Phonda Ghát. Rs. 39,979 was expended in 1884-85 on the length from Dájipur (at the head of the Phonda Ghát) to Nipáni. Proposals to bridge the large rivers are under consideration; and the recently sanctioned railway feeder from Nipáni will carry this road on across the West Deccan Railway.

124. The road from Kárwár on the coast to Hubli has been improved by alterations on the Arbail Ghát, in easing some bad gradients, at a cost of Rs. 82,076, of which the expenditure in 1884-85 has been Rs. 18,976; and the continuation of the same road from Hubli, eastwards beyond Gadag, has been much improved by building hard crossings to nalás, at an outlay of Rs. 9,162.

125. The Havanur-Samasgi Road (Provincial), in the Dhárwár District, from Samasgi on the Kánara Frontier, 10 miles, to Adur in Dhárwár, has been improved by building two bridges and 27 drains, which are approaching completion; the estimated cost is Rs. 23,944, and the expenditure in 1884-85, Rs. 18,758. When completed to Haveri (on the main north and south cart road, and a station of the proposed railway from Hubli southwards), this road will be a very important one.

126. The road from Somankatti to Shirolkop, between Byádgi and Havasbhavi, Dhárwár District, Local, 10½ miles long, has been in progress, and the embankments thrown up during the year, in which the expenditure has been Rs. 5,998, out of the total estimated cost of Rs. 26,972; when completed, it will bring the large towns of Hirekerur, Chikerur, and Havasbhavi into communication with the railway from Hubli to the south of the district.

127. The road from Byádgi to Motebennur, Dhárwár District, (Local), a short road, three miles long, has been in progress. It will connect the town of Motebennur with the railway station at Byádgi. The estimated cost is Rs. 3,931, of which Rs. 2,688 has been expended during the year.

128. The road from Sangameshvar to Sakharpe, Ratnágiri, (Provincial) has been in progress; the road will connect the town of Sangameshvar, which is at the head of a tidal creek, with the Amba Ghát Road at Sakharpe. The estimated cost is Rs. 84,143, and the expenditure up to end of 1884-85, Rs. 42,715.

129. The road over the Muthowli Khind, in the Mángaon Táluka, Kolába, (Local), a section of the Indápur-Pali road, which is a branch of the main road running north and south through the Kolába District, partly executed in 1883-84, has been completed during the year, at a cost of Rs. 17,066.

130. The road from Gote-Budruk to the creek opposite Dásgaon, Kolába, (Local), has been completed at a cost of Rs. 2,579.

131. The improvement of the crossing of the Krishna River at Kolhar, on the Sholápur-Hubli road, has been in progress. This work is a diversion, some 17 miles long, of the old line between Mulwad (a station on the West Deccan Line) and the Krishna River at Kolhar, and a paved crossing has been constructed at the ford over the river, which secures an approach, all the year round, to the ford and ferry at Kolhar. The estimated cost is Rs. 62,724, and the outlay to the end of the year Rs. 47,320.

132. In the Sátára Collectorate, the question of feeder roads to the Western Deccan Railway was under consideration, and surveys made for a road from Watar to Wái *en route* to Mahábaleshvar, and a second from Padli to Sátára. These will be the two principal feeder roads of the district, and will be undertaken first. During the year the rates for labour have been very materially affected by the railway works, causing a general increase.

133. The following 3rd class Local Fund roads have been improved during the year, by easing gradients to nála crossings, constructing road dams, and improving surface formation, *viz.*, Peit-Sángli road, at a cost of Rs. 4,415; Malhárpeit-Pandharpur road, at a cost of Rs. 2,345, and Sátára-Tásgaon road, at a cost of Rs. 677.

134. In the Poona District the 2nd section of the Local Fund road from Lonávla to Poud was completed, with the exception of the spreading and consolidation of the road metal, which will be proceeded with during the ensuing monsoon. The total expenditure was Rs. 10,584.

135. In the Ahmednagar Collectorate 7 feeder roads to the Dhond and Ahmednagar Railway were under construction, as follows:—The road from Loni to Belápur station was completed at a total outlay of Rs. 49,894; as also the road from Belápur town to Belápur station at an outlay of Rs. 15,318. The road from Rahata to Chitali was nearly completed, except masonry work No. 10, called the Anandee Nála, and some rolling, which will be done during the monsoon; total outlay, Rs. 42,599. The road from Wámbori railway station to the Ahmednagar and Málegaon road, nearly two miles in length, was commenced in October last, and by the end of the year three-fourths of the earthwork, and nearly one-third of the excavating, carting and stacking of muram, and one-half of the collecting, carting, and stacking of sand, and the carting of stone required for the slab drains, &c., completed, at a cost of Rs. 2,943. On the Nevása-Belápur road, which is nearly 34 miles in length, the earthwork, from the junction with the Toka road up to Bhoker, has been nearly finished; the dams Nos. 1 and 2, and the Kazi dam, a double-vent slab drain, and the Lendhora bridge commenced; the latter work, consisting of two arches of 31 feet span, has been completed up to within 5 feet of springing of arches, and it is proposed to allow the turning of the arches to stand over till next season, to ascertain the actual height of

waterway necessary to meet all contingencies. The tindal's quarters and stores and kalassis' house have been constructed; the ferry boat and masonry standards, with wire rope, also a small passenger boat, have been provided, for the Pravara river crossing, and muram up to the 12th mile has been supplied. Total outlay, Rs. 39,135. On the road from Khospuri to Wámbori, all the earthwork, with the exception of the embanked approaches to culverts and drains, which are under construction, has been completed. The muram surface has been nearly finished, except the rolling. One double vent slab drain, one 18 feet and two 10 feet concrete culverts, a store-house at Wámbori, and the Goonjala Ghát work, including embanking, cutting in rock and muram, muram surfacing, and milkbush hedge, have been completed. Total outlay, Rs. 21,770. The Pimpri-Wadgaon road, nearly 3 miles in length, will be completed during the monsoon of 1885. During the year the earthwork was completed, and some of the muram collected, as also material for the masonry works, which are insignificant, as the line runs chiefly along a ridge. The outlay has been Rs. 2,678.

136. The metalling of the Ahmednagar and Toka road has been proceeded with, and a total outlay incurred to the close of the year of Rs. 12,000.

137. On the Local Funds road from Tisgaon to Pathardi, 7·34 miles in length, the earthwork and cutting up to Babulgaon, (about 6 miles), and the muramming and sanding of portions of the road, have been completed, as well as a dry-stone slab drain near Tisgaon, and two aqueducts in the village of Newdunga. The total outlay has been Rs. 11,458.

138. Improvements to the Karanji Ghát road have been in progress from Local Funds: these consist of supplying a milkbush hedge down the outer edge of the ghát on a mound of earth; two double-vent and 12 single-vent slab drains, which have been constructed; also dry-stone revetment walling here and there, and parapet walling. The inner edge of the road has been stone-kerbed, and where the bends were sharp, and of small radius, they have been enlarged. The total outlay has been Rs. 4,385.

139. The widening of the Vitta Ghát, on the Loni-Bari road, has been completed so far as the funds at disposal allowed. The roadway has been widened to the full extent throughout, and parapets have been provided in places which will be finished during the year; the catch-water drain has been cleared, and an inner gutter to the road, with kerbing and guard stones to protect it, provided. A small portion of this kerbing, portions of the parapet walling, and the metalling of the road is all that remains to be done. The road has not been closed to traffic during the progress of the improvements. The outlay has been Rs. 4,999.

140. A diversion of the Local Fund road from Loni to Bari, necessitated by the inclusion of a portion of the direct line within the area of the land to be taken up for the Mahá-ladevi tank, sanctioned as a Protective Public Work by the Government of India, has been in progress from 1883-84, and at the close of the year the earthwork was practically completed, and the bridging and surfacing of the road remained to be taken in hand. The total estimated cost of the diversion is Rs. 22,700, of which Rs. 10,000, representing the extra cost to the Local Funds involved by the abandonment of the straight track of the Loni-Bari road, have been ordered to be met from the grant for the Maháladevi tank. The total outlay has been Rs. 9,653.

141. The country track from Thugaon, *viâ* Washira, to Kotul, described in the last report, has been completed during the year, at a total outlay of Rs. 3,825.

142. Country tracks in the Akola Táluka, intended to provide cart communication in hilly country hitherto impassable, were commenced late in the year, and an expenditure of Rs. 1,187 incurred from Local Funds.

143. In the Násik Collectorate, the Nanashi Ghát road was completed, and opened to traffic, at a total outlay of Rs. 24,681. This road is intended to open out the northern part of the Peint Districts, where there are large areas of valuable teak forests.

144. The Satighát road, a work of improvement, metalling, and rebridging of a much curved ghát road, leading into the south of the Peint District, has been in progress; but owing to the difficulty experienced in procuring labour, the whole of the allotment could not be spent. The estimated cost is Rs. 29,950, and the outlay during the year, Rs. 7,524.

145. A cart track from Harsul to Goldaree, was commenced during the year, and completed at an outlay of Rs. 2,749, from Local Funds.

146. In the Khándesh Collectorate, the metalling of the Dhulia and Chalisgaon road was in progress, and 5 miles were completed during the year. The metal for the remaining 4 miles has been collected, and will be spread next monsoon. The total expenditure has been Rs. 39,722.

147. The Panjra causeway at Ner, on the Dhulia and Surat Road, has been completed at a total cost of Rs. 20,024. By the completion of this work a bad river crossing has been spanned by a very solidly built low-level bridge, a great boon to the traffic, which can now pass during the monsoon at all times, except when the river is in great flood.

148. The continuation of the Dhulia and Pimpalner Local Fund road from Sakri to Pimpalner, has been in progress. Of this road, 6½ miles had been completed up to the end of 1883-84, and during the year the remaining 7 miles have been completed, with muram, small culverts, and drains and level-crossings. Consolidation of the road surface will be carried out when rain falls, and the road will be opened for traffic early next monsoon. The amount of the estimate is Rs. 3,20,893, and the total expenditure up to the end of the year, Rs. 2,78,228.

149. Of the 3rd section from Dondaicha to Ranala of the road from Songir to Nandurbár, 7 miles have been completed during the year, with the exception of consolidation, which will be carried out early next monsoon; the rest of the road has been banked and murammed, and the masonry works are in progress. The whole road will be opened to traffic after the coming monsoon. The estimated cost is Rs. 66,157, and the outlay to the end of the year Rs. 50,927, from Local Funds.

150. The 4th section from Ranala to Nundurbár of the road from Songir to Nundurbár, estimated to cost Rs. 62,746, was commenced in December 1884, and about 3½ miles of the earthwork completed during the year, at an outlay of Rs. 5,007 from Local Funds.

151. The metalling of the road from Songir to Dondaicha could not be proceeded with during the year, owing to the inability of the contractors to supply the requisite amount of metal. Sufficient to cover 6 miles has, however, been collected, which will be spread and consolidated during the next monsoon. This is a most desirable work, as the present murammed surface is quite unable to stand the enormous traffic. The outlay during the year has been Rs. 6,349, from Local Funds.

152. On the road from Shahada to Dondaicha, estimated to cost Rs. 1,17,583, very little progress could be made, owing to the great scarcity of labour, but some earth and muramming has been done, at an outlay of Rs. 11,121 from Local Funds.

153. The 2nd section of the road from Jalgaon to Dharangaon was completed during the year, with the exception of the inspection bungalow at Dharangaon, which is in progress. The total expenditure up to the close of the year has been Rs. 96,816, from Local Funds.

154. The Dharangaon and Chopda road was commenced in December 1884, and 3 miles banked during the year, at an outlay of Rs. 3,953 from Local Funds.

155. Of the road from Chalisgaon to the foot of the Outram Ghat, of which 3 miles had been opened to traffic during the previous year, the remaining 5 miles were opened during the year, and the whole road completed. The outlay has been Rs. 21,906, from Local Funds.

156. Of the Railway feeder road from Nasirabad to the Bhadli Station of the Great Indian Peninsula Railway, estimated to cost Rs. 5,864, about 1 mile of banking has been completed, and a large quantity of muram collected, at an outlay of Rs. 2,891 from Local Funds.

157. In the Sind Province, a road from Bhangi Kulhora to Ghogharo was completed during the year at a total outlay of Rs. 5,792, from Local Funds. This is a railway feeder, and connects the important town of Ghogharo, the centre of the rice trade, with the Bakrani road station.

2.—BRIDGES.

158. In the Northern Division, the reconstruction of the Rander wing approach of the Hope Bridge at Surat, described in the last year's report, was completed at a total outlay of Rs. 43,379.

159. In the Broach Collectorate, the combined iron and masonry bridge across the Bhuki Creek, on the Broach and Dehej Road, which was commenced in 1883-84, was two-thirds finished during the year. The construction of this bridge is important, as until it is completed, the whole of the Wagra villages are cut off from the village of Amlesar, in the Broach Táluka, which is the Mamlátdár's station, and from the market for their produce at Broach. The Bhuki Creek, it may be stated, although dry at the neap, is filled by the tide at high springs, and is then almost, if not quite, impassable, except at a fordable point near Vilayet; during the whole season, except at this point, the muddy bottom renders the passage of carts a work of great labour and danger, and to this point every cart, from the villages west of a line drawn from Badlapur on the north to Kothna on the south, must come round to cross. The outlay during the year has been Rs. 58,863, and the total outlay Rs. 1,09,600.

160. In the Panch Mahâls Collectorate, the Bridge over the Vankdi River, on the road from Godhra to Jhalod, was practically completed during the year, with the exception of parapets and a little embankment; the total outlay to the close of the year being Rs. 18,165; as also the bridges and drains on the road from Kalol to Champaner, *viâ* Halol, at a total outlay of Rs. 14,022.

161. The bridges and drains on the Godhra and Sunth road (British portion) have been in progress, and up to the close of the year one bridge of 1 span of 20 feet, and one bridge of two 15 feet spans have been completed up to springing; and some of the drains have been completed, and other works are proceeding. The total outlay to the close of the year has been Rs. 12,997, from Local Funds. The Raja of Sunth is constructing bridges on the 10 miles of the road in his territory.

162. Bridges and drains on the Godhra and Shera Road have also been in progress. This road is a feeder to the Godhra station of the Bombay, Baroda, and Central India Railway, and is 25 miles in length, running through British and Lunávada territory, and terminating at the capital of the Lunávada State. The British section, 14 miles in length, was provided with a cleared line some years ago, but the traffic is heavy, and it has been deemed desirable to construct bridges and drains, and eventually metalling may be added. There are in all 15 masonry works proposed, the two largest bridges having each three spans of 20 feet. One bridge of three spans of 20 feet, one bridge of two spans of 20 feet, and one of two spans of 12½ feet each, have been completed to springing, and other works are in progress. The total outlay has been Rs. 19,808, and the outlay of the year Rs. 9,655. The Rája of Lunávada is taking steps to construct the requisite bridges and drains on the portion of the road in his territory.

163. In the Southern Division, the bridge in the north approach of the Satgatti Bridge, on the mail road from Poona to Belgaum, in the Belgaum Collectorate, consisting of six spans of 30 feet each, was completed during the year at a cost of Rs. 31,721. Masonry bridges over the Gomari and Ramapur nálas, on the Belgaum and Linganmat road, were in progress. The former is estimated to cost Rs. 6,848, and the latter Rs. 9,600.

164. In the Kánara Collectorate, the bridge over the Borphali Nála, on the road from Shetowna to Kadra, of three spans of 30 feet each, with timber superstructure, which was half finished in 1883-84, was completed during the year at an outlay of Rs. 4,657; and a bridge of one span of 35 feet, the cost of which is to be met equally from Local and Forest (Provincial) funds, over the Chawati Nála, on the Yellápur and Sirsi road, was in progress, the outlay during the year amounting to Rs. 3,044, against the estimated cost of Rs. 6,157.

165. In the Ratnágiri Collectorate, the bridge over the Sakharpe Nála, on the main road from the foot of the Amba Ghát to Ratnágiri, of three spans of 20 feet, commenced in 1883-84, was completed during the year at an outlay of Rs. 14,651; and materials were collected for a bridge to be constructed over the Avera Nála, on the road from Hátkhámbe to Dájipur, of two spans of 30 feet each, estimated to cost Rs. 11,525, on which the outlay has been Rs. 1,500.

166. In the Kolába Collectorate, bridges over the Teen Irra river, of three spans of 25 feet each, and the Khandálla river, of three spans of 20 feet each, situated on the road from Alíbág to Dharamtar, were completed during the year, at an outlay of Rs. 7,634 and Rs. 6,750, respectively; and a bridge over the Sagaon River, of three spans of 25 feet each, was in progress, the outlay of the year having amounted to Rs. 3,988.

167. In the Central Division, the masonry bridge across the Karah River at Sáswad, in the Poona Collectorate, commenced in 1883-84, was completed during the year, at a total cost of Rs. 22,674.

168. In the Shikárpur Collectorate of the Sind Division, bridges of one segmental arch of 27 feet span each, and 5 feet rise, with abutments 9 feet high, were constructed over the Mirwah, on the Shikárpur and Lárkhána road, the Koraiwah, on the Makan and Sadiksha road, and the Garangwah, on the Chak and Sukkur road, at an outlay of Rs. 2,995, Rs. 3,107, and Rs. 2,982, respectively, from Local Funds; and a bridge over the Garangwah, on the Arai and Goserji road, of one segmental arch of 30 feet span and 6 feet rise, completed at a cost of Rs. 3,718.

169. A bridge over the Dadwah, on the road from Moro to Lala, in the Hyderabad Collectorate, of two spans of 30 feet each, estimated to cost Rs. 5,000, was in progress, and Rs. 3,600 expended up to the close of the year, from Local Funds.

5.—BOAT BRIDGES AND FERRIES.

170. A flying bridge, with approaches, &c., across the river Darna at Chehedi, on the Násik and Poona Road, has been in progress from Provincial funds during the year. This is to be a ferry raft of the usual double boat pattern, attached to a wire rope suspended from supports on the banks. The wire rope is made of steel, 3½″ in circumference, and is very strong and light. Metalled approaches, and a shed for tindal and passengers, have been provided, and the boat will be at work in the ensuing monsoon. Outlay during the year, Rs. 7,917.

171. For the ferry at Kallas on the Pravara River, a wire rope has been provided during the year, the standards having been erected in the past year, at a total outlay of Rs. 2,043. To complete the accommodation at the ferry, it has been proposed to provide a twin boat, at an estimated outlay of Rs. 3,429, and to remove to Kotul the single boat now at Kallas. The whole outlay will be met from Local Funds.

6.—ACCOMMODATION FOR TRAVELLERS.

172. In the Belgaum Collectorate, Dharmshálas were completed at Hasur and Sumpgaum, at a total cost of Rs. 5,001 and Rs. 5,592, respectively, from Local Funds.

173. In the Ahmednagar Collectorate, Dharmshálas were constructed for the accommodation of both Europeans and Natives, at Belapur, Signapur, and Pimpri Railway Stations, at an aggregate outlay of Rs. 5,223, from Local Funds.

174. The new Travellers' Bungalow at Sukkur, in the Shikárpur Collectorate, commenced in 1883-84, was completed during the year at a total outlay of Rs. 10,237 from Local Funds.

III.—MISCELLANEOUS PUBLIC IMPROVEMENTS.

175. The total outlay under this head has been Rs. 8,30,130, of which Rs. 5,67,190 have been expended on Original Works; Rs. 1,38,116 on Repairs; Rs. 1,19,140 on Establishment; and Rs. 5,684 on Tools and Plant. The principal works under execution, or completed, during the year were:—

4.—LIGHTING.

176. Lighting by gas has been substituted for kerosine oil lamps on the Marine Lines Road on the Esplanade, Bombay, at an outlay of Rs. 2,555.

5.—WATER SUPPLY.

177. Two sluices have been constructed to the tank at Dihan, in the Surat Collectorate, at a cost of Rs. 2,957, from Local Funds.

178. Improvements to 17 tanks in the Kaira Collectorate, all required for village water supply, were in progress. Of these 5 have been finished, others have made good progress, and most of them will be completed during the ensuing year. The total outlay during the year has been Rs. 19,668, from Local Funds.

179. In the Belgaum Collectorate, a well at Mabnur, in the Parasgad Taluka, was in progress, the expenditure during the year being Rs. 2,421, against the estimated cost of Rs. 2,971, from Local Funds.

180. In the Kolába Collectorate, the water from the Roha Water Works was brought into the town, and distributed from the main pipe, through branches, to 7 hydrants erected in several quarters of the town. These works were commenced in 1881-82, and water brought only to the outskirts of the town, owing to insufficiency of funds. The entire cost of the project has been Rs. 25,147.

181. In the Bijápur Collectorate, the restoration of the tank between Sunag and Tumbarmatti, in the Bagalkot táluka, was nearly completed. The outlay has been Rs. 3,385 from Local Funds.

182. In the Poona Collectorate, the Talegaon Dabhade and Junnar water supply projects, described in the last report, have been in progress. On the former the excavation of the trench and filling in of the same with puddle, the waste weir, outlet culvert, and main cast iron pipes from the reservoir up to the service cistern, were completed, and the embankment was nearly so; the construction of the service cistern was in progress. The progress on the latter has been precisely similar to the above, with the exception of the laying of the main, which was in progress. The outlay during the year on the works has been Rs. 23,727 and Rs. 22,735, and the total outlay Rs. 28,307 and Rs. 25,536, respectively, from Municipal funds.

183. A project for supplying the town of Sirúr (Ghodnadi) with water from the river, by pumping the water into a reservoir to be constructed in the high part of the town, to distribute it thence over the main streets of the town, and to erect stand pipes for drawing from, was taken in hand during the year, at the cost of the Municipality of that town. The estimated cost is Rs. 8,420, and the outlay to the close of the year Rs. 2,158.

184. In the Sátára Collectorate, the Municipal water supply project for the Town of Sátára was in progress, and all works in connection with the dam and its appurtenances, except the fixing of the foot-bridge leading to the sluice tower, and all the masonry works on the channel, were completed; with the exception of the trough lines in the second and third sections, the channel is now complete throughout. The outlay on the work during the year was Rs. 49,008.

185. In the Ahmednagar Collectorate 4 wells were completed during the year, from Local Funds.

186. In the Khándesh Collectorate a new well at Udhalod was completed, and one at Mehunbara was in progress, from Local Funds.

6.—DRAINAGE.

187. The excavation of a drainage channel at the Town of Dholka, in the Ahmedabad Collectorate, described in the last report, was completed during the year at a total outlay of Rs. 5,996, which has been met partly from Municipal and Local, and partly from Provincial funds.

7.—HARBOURS.

188. In the Thána Collectorate, the extension of the Chendni Bandar, and erection of a store-shed thereon, described in the last year's report, was completed during the year, at a total outlay of Rs. 28,280, met partly from Imperial, and partly from Southern Port Funds.

189. In the Ahmedabad Collectorate, an earthen platform, 526 feet long, 60 feet broad, and 2 feet high, for landing goods from boats, or for storing goods awaiting transport, has been carried out at the Chilkari near Dholera, and quarters for Customs kárkúns and peons, and an office, built at the bandar. The funds for the works, excepting the cost of the Police quarters, which has been met from Provincial funds, have been provided from the Northern Group Port Funds.

190. In the Kolába Collectorate, the removal of the rocks in the Nagothna tidal creek, between Dharamtar and Nagothna, which proved a serious inconvenience to traffic and danger to country craft, was proceeded with. The most dangerous of the rocks were removed by blasting, and at the close of the year very little remained to be done to render the creek navigable. A ferry steamer, carrying 200 passengers, is now able to run up to Nagothna on the flood tide, and return with the ebb, and country boats of considerable draught and tonnage can now use the creek with safety. The estimated cost of the work is Rs. 4,786, and the outlay of the year Rs. 3,994, from Local Funds.

191. At the Karáchi Harbour, the Manora Breakwater stands well, as it has now done for ten successive monsoons. The concrete capping on the harbour side, to make up for subsidence, was continued for a length of 134 feet; 9,000 cubic feet of rubble stone was deposited in the base on the sea side to fill up slight hollows.

The beacon on the breakwater stood well, and the wire rope received from England was fixed in place after the monsoon, for running out the red light, which, in future, it is hoped may be maintained during the south-west monsoon, as well as in the fair season.

The dredging of the harbour was carried on from the annual grant of one lakh of rupees, under which 52,892 tons were dredged in rectification and some improvements of the entrance channel, and 162,762 tons within the harbour, chiefly in the improvement of the channel between the Manora and Keamari anchorages, and in the enlargement of the latter.

The average cost of the dredging for the year, after allowing for fuel, &c., remaining on hand, was 5 annas 1 pie per ton, a slight advance on the rate of the previous year, chiefly owing to the hard material along the west side of the entrance channel, at which the dredger could do but little work, though the benefit will be great.

One of the three sailing hopper barges ordered from England by the Harbour Board is now nearly ready for use, and the material of the two others is daily expected. These will cheapen the cost of the dredging by dispensing with country boat lighterage.

327,643 tons were also dredged within the harbour during the year, at the charge of the Karáchi Harbour Board, and 4,037 tons for the Sind, Punjab, and Delhi Railway Company in connection with their new boat wharf at Keamari.

The diving party removed 432 tons of rock from Deep-water Point, and 165 tons of stone from the west edge of the entrance channel, about half way in. The material from both places was deposited round the piles, in the line of the west training groyne, which remains at its length of 4,503 feet, out of 7,340 proposed, funds not having sufficed to extend it during the year, though 2,273 tons of rubble from the quarries was used in raising hollows in the groyne here and there, and protecting the marking piles.

The usual periodical survey of January last shows very good results from the comparatively vigorous dredging now being carried on, especially in the channel between the Manora and Keamari anchorages, which is now beginning to be made use of as an important addition to the anchorage space of the harbour.

The channel between Keamari and the Native Jetty also continues to improve, and it was necessary to take steps to protect the south wall of the Native Jetty from the action of the scour, which requires the guidance and aid proposed to be given as part of the 10 lakh loan project under the Harbour Board.

His Excellency Sir James Ferguson, the late Governor of Bombay, visited Karáchi in November last, accompanied by Lieutenant-General C. J. Merriman, the Secretary to Government in the Public Works Department, with the special purpose of enquiring into the projects of the Harbour Board, for the improvement, &c., of the harbour. A minute embodying certain recommendations by His Excellency has been submitted to the Government of India, whose reply has recently been received.

8.—LIGHTHOUSES.

192. The new lighthouse at Perim, Aden, described in the last year's report, has been completed, the light and machinery have been received from England early in the year.

MISCELLANEOUS.

193. The foreshore at Máhím, from the old Portuguese Fort to the sluices at Warli, having for many years past suffered from the encroachments of the sea, and especially that portion of it situated between the Fort and the Tannery, and the encroachments continuing to increase yearly, destroying much valuable private property, the attention of Government was drawn thereto in 1882, by a petition from the members of the Anjuman-Ahbab, and other Mahomedan inhabitants of Bombay, who brought to notice that land consisting of carts, with the buildings thereon, had recently been washed away, immediately in front of the Durga or shrine and Mosque of Fukeer Mughdoom Ali, and that that much-venerated shrine of the Mahomedan community, as well as the adjacent property, would inevitably share the same fate, unless immediate precautionary measures, to stay the ravages of the sea, were taken by Government. An enquiry was thereupon ordered to be made into the matter, and a committee consisting of Mr. J. H. Grant, the Collector of Bombay, and Lieut-Colonel W. Merriman, R. E., the Acting Executive Engineer at the Presidency, was directed to report fully on the subject. The report of the committee showed that the encroachments were of a serious and steadily progressive character, and they strongly recommended that no further delay in protecting the existing foreshore by a sea wall, groynes, or other engineering works, should be permitted. The cause of the encroachment, as alleged by the old fishermen and other residents on the shore, was stated to be the bunding up of the water by the several causeways constructed since 1843, viz., the Jamsetjee Causeway from Máhím to Bandra, the G. I. P. Railway and B. B. & C. I. Railway causeways, and the Sion Causeway ; the interruption to the flow of the tide round the island of Bombay to the north, into the Chembour Creek, as formerly, thus caused, having the effect of turning the current upon the low land adjoining, and causing its gradual submersion. The Committee also brought to notice that the evil was being intensified by the constant removal of large quantities of sand from the foreshore, and they recommended that this should be immediately stopped. On a consideration of this report, the Superintending Engineer, Northern Division, was called upon to draw up a report on the engineering works necessary for the protection of the foreshore, and legal measures were ordered to be taken to prevent the removal of sand.

Various proposals for the engineering works considered necessary were accordingly submitted to, and considered by, Government, who, after much discussion, finally decided in favor of the following :—(1) to increase the waterway in the B. B. & C. I. Railway causeway by the construction of a 4-span iron bridge, estimated to cost Rs. 1,34,078 ; (2) to provide 240 feet additional waterway in the Máhím and Bandra causeway at an estimated cost of Rs. 1,81,169 ; and (3) to protect with dry rubble pitching the foreshore at Máhím, from the fort to the tannery, at an estimated cost of Rs. 72,974 ; and the latter, as being the most pressing work, was ordered to be undertaken at once, and a report made of its stability after the coming monsoon, in view to the extension of similar protective works to the south end of the bay ; the works proposed for increasing the waterway of the causeways to be undertaken hereafter, as funds are available. A grant of Rs. 72,900 was accordingly made, and the work of pitching has been in progress during the year, in which the outlay was Rs. 55,904.

194. The protection of the north bank of the river Tapti above the Hope Bridge at Surat, has been completed during the year, at a total outlay of Rs. 6,982. The results achieved have been a considerable deposit of silt, and the checking of further erosion of the bank.

195. Fence spurs were also constructed to protect the Rander side bank of the river Tapti from floods above tidal water, to check gradually the force of flood water, and to prevent injury to the newly constructed approach of the Hope Bridge, and the whole of the open ground has been planted with babul and other trees for the further protection of the bank. The works have been fairly successful. The outlay has been Rs. 3,837.

196. For the further protection of the Rander bank from tides at Surat, a light single line of spurs was constructed last season, but as these were only of a temporary nature, they were removed before the last monsoon set in. Erosion having recommenced, strong spurs of single rows of piles, and of a more permanent character, were proposed, and constructed during the year. These spurs are intended to assist in collecting silt in tides in the dry season, and in saving the banks during the monsoons. The outlay has been Rs. 2,593.

197. The work of clearing and levelling ground in the Arkilla at Bijápur, and in the vicinity of the Public offices and residences, was in progress during the year, and was carried out by the extra-mural convict gang located at Bijápur for the purpose. The total estimated cost of the work is Rs. 1,23,728, and the outlay up the end of the year Rs. 37,329.

198. A protection wall at Sháháda, in the Khándesh Collectorate, was commenced from funds contributed by the inhabitants, but owing to a great scarcity of suitable teak logs, very little progress was made during the year. The estimated cost is Rs. 3,706.

BOMBAY PRESIDENCY
Part I.
Gujárat and the Tápti Valley
Scale, 40 Miles = 1 Inch.
40 30 20 10 0 40
Govt Photozinco Office, Poona, 1885
KATHIAWAR
CUTCH
RUN OF CUTCH
GULF OF CUTCH
GULF OF CAMBAY
CENTRAL INDIA AGENCY
KHANDESH
BERAR
UDEYPUR
DONGARPUR
BANSWARA
PALANPUR
RADHANPUR
EDAR
SADRA
AHMEDABAD
DHRANGADRA
BHUJ
NAWANAGAR
RAJKOT
JUNAGARH
BHAVNAGAR
BROACH
CAMBAY
BARODA
GODHRA
BALASINOR
SUNTH
LUNAWARA
JABUA
AMJHERA
DHAR
INDORE
MHOW
KARGUN
NARUKOT
CHOTA UDEPUR
BARIA
NANDOD
SURAT
DHULIA
BANSDA
JALGAON
AMALNER
SHAHADA
SHIRPUR
NANDURBAR
SINDKHERA
TALODA
CHOPRA
PIMPALNER
NERBUDDA R.
TAPTI R.
MAHI R.
SABARMATI R.
SARASWATI R.
To Ajmir
To Nasirabad
To Agra
To Indore
To Nagpur
To Mahidpur
To Burhanpur
To Vishalpore

BOMBAY PRESIDENCY
Part II.
The Deccan, Konkan and Karnátic
Scale, 40 Miles=1 Inch.
40 30 20 10 0 40
Govt Photozinco Office, Poona, 1885.
BOMBAY
ALIBAG
MORUD
JANJIRA
BASSEIN
SALSETTE
KOLABA
THANNA
NÁSIK
AHMEDNAGAR
AURANGABAD
SATÁRA
SHOLAPUR
RATNÁGIRI
KOLHAPUR
BELGAUM
DHARWAR
KARWAR
GOA
BIJAPUR
MYSORE TERR.
MADRAS PRESY.
BERAR
SURÁNA
DHARAMPOR
DAMAN
PEINT
BANSDA
JAWHAR
SURGANA
PANHALA
JATH
JAMKHANDI
RAMDURG
SAVANTVARI
KURUNDWAD
To Aurangabad
To Bellary
To Madras
To Bangalore
GODAVARI RIVER
KRISHNA R.
BHIMA R.
NIRA RIVER
PRAVARA R.
MULA R.
GIRNA R.
KALINADI R.
GHATPRABHA R.
MALPRABHA R.
KRISHNA CANAL
NIRA CANAL
PRAVARA CANAL
GODAVARI CANAL
LAKE FIFE
BHATGHAR RESV.
MHASVAD TANK
Bombay
Kharkála
Panvel
Kalyán
Murbád
Shahápur
Vada
Jawhar
Dahánu
Vangáon
Chinchni
Tárápur
Palghar
Máhim
Umbargáon
Vevji
Bilimora
Chikhli
Khairgaum
Bulsar
Pardi
Satána
Málegaon
Kaigaon
Chalisgaon
Pachora
Jumner
Bhadgaon
Chandor
Pimpalgaon
Basvant
Nándgaon
Dindori
Niphád
Yeola
Sinnar
Ságamner
Akola
Sangamner
Yewása
Ráhuri
Sheogaon
Junnar
Nerál
Párner
Khed
Sirur
Kada
Jámkhed
Shrigonda
Karjat
Talegaon Dhamdhera
Talegaon Dábháde
Alandi
Sáswad
Jejuri
Supa
Pomurvada
Baramati
Indápur
Barsi
Barsi Road Sta.
Karmala
Pátas
Dhond
Madha
Mohol
Mohoimb
Tellyderabad
Akalkot
Malsiras
Pandharpur
Dahiwari
Koregaon
Wáee
Sangola
Mangalvedha
Atpádi
Vita
Khánapur
Tásgaon
Kavathe Mahánkal
Kavathe Yamái
Kavathe Ekand
Daphlapur
Sindgi
Indi
Vijápur
Kavathe
Athni
Sávdigi
Bágewári
Gándi
Jerdal
Muddebihál
Bágalkot
Kaládgi
Jamkhandi
Mudhol
Ghatprabha R.
Gokak
Hungund
Badámi
Torgal
Saundatti
Sampgaon
Nawalgund
Dharwar
Hubli
Kundgol
Shirhatti
Dambal
Lakshmeshwar
Shiggaon
Mundgod
Kalghatgi
Kánara
Yellápur
Sonda
Sirsi
Ankola
Bhatkal
Honawar
Kumta
Bilgi
Siddápur
Hangal
Haveri
Ránibennur
Hirekerur
Karajgi
Bankápur
Gersappa
Vengurla
Malwan
Deogarh
Viziadurg
Rajápur
Vishálgarh
Anjanwel
Jaigad
Harnai
Bankot
Dápoli
Khed
Chiplun
Sangameshwar
Ratnágiri
Malkapur
Alta
Shirali
Kasbe
Ashta
Sangli
Miraj
Kavathe Mahánkal
Kavathe Yamái
Kavathe Ekand
Daphlapur
Sindgi
Indi
Vijápur
Kavathe
Athni
Sávdigi
Bágewári
Gándi
Jerdal
Muddebihál
Bágalkot
Kaládgi
Jamkhandi
Mudhol
Ghatprabha R.
Gokak
Hungund
Badámi
Torgal
Saundatti
Sampgaon
Nawalgund
Dharwar
Hubli
Kundgol
Shirhatti
Dambal
Lakshmeshwar
Shiggaon
Mundgod
Kalghatgi
Kánara
Yellápur
Sonda
Sirsi
Ankola
Bhatkal
Honawar
Kumta
Bilgi
Siddápur
Hangal
Haveri
Ránibennur
Hirekerur
Karajgi
Bankápur
Gersappa
Vengurla
Malwan
Deogarh
Viziadurg
Rajápur
Vishálgarh
Anjanwel
Jaigad
Harnai
Bankot
Dápoli
Khed
Chiplun
Sangameshwar
Ratnágiri
Malkapur
Alta
Shirali
Kasbe
Ashta
Sangli
Miraj

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